

REMARKS

In the Official Action mailed on **15 May 2007**, the Examiner reviewed claims 1-3, 5, 7-14, 16, 18-25, 27, and 29-36. Claims 1-3, 5, 7-14, 16, 18-25, and 29-36 were rejected under 35 U.S.C. § 103(a) based on Frey, Jr. et al (USPN 5,201,044, hereinafter “Frey”), and Fleming (USPN 6,023,772, hereinafter “Fleming”).

Rejections under 35 U.S.C. §103(a)

Independent claims 1, 12, and 23 were rejected as being unpatentable over Frey in view of Fleming.

Examiner points out that Fleming teaches not logging the state information from volatile to non volatile memory if the speed of recovery is critical.

The present invention teaches periodically committing the log in the volatile memory into non-volatile storage, and **then removing those committed operations from the volatile memory**. The invention also teaches that during a subsequent start up from, say, failover, only those operations that are in the volatile memory, and that have not been committed into the non-volatile storage, are replayed (see page 9, lines 24-27 to page 10, line 1 of the instant application).

The present invention is beneficial because maintaining a log in volatile memory and **requiring that recovery from a failover involves replaying only those operations that have not been committed to non-volatile storage** facilitates speedy recovery of file operations on the secondary server if the primary server fails (specifically without incurring the cost of possibly millions of additional processor cycles that will be needed to complete recovery of file operations in the case that the log file is stored in non-volatile storage) (see page 2, lines 15-17 of the instant application).

In addition, the present invention also **requires check-pointing the log into non-volatile storage**, which is beneficial because it ensures access to the logged operations for replaying, if necessary, from disk storage. In addition, **removing entries from the volatile memory upon commitment to non-volatile storage** ensures that the volatile memory is always available for new log entries, without allowing delay because the log is full.

Applicant has amended claims 1, 12, and 23 to clarify that the present invention teaches **periodically committing the log to non-volatile storage, and removing the committed entries from volatile storage, as well as replaying those operations that are in the log in volatile memory and have not been committed to non-volatile storage**. This is supported by lines 21-27 of page 9, lines 1-2, as well as lines 9-12 in page 10 of the instant application.

Frey teaches storing the log of file operations of distributed transactions involving multiple nodes at any one node. Applicant respectfully points out that Frey does not teach enabling reconstruction using contents of the log file **in volatile memory** in order to speed the process. In addition, Applicant respectfully submits that while Fleming teaches the use of a secondary system for failover recovery, there is nothing within Frey or Fleming, either separately or in concert, that teaches periodically committing the log to non-volatile storage, and removing the committed entries from volatile storage, as well as replaying those operations that are in the log in volatile memory and have not been committed to non-volatile storage.

Accordingly, Applicant has amended independent claims 1, 12, and 23 to clarify that the present invention teaches periodically committing the log to non-volatile storage, and removing the committed entries from volatile storage, as well as replaying those operations that are in the log in volatile memory and have not been committed to non-volatile storage. This is supported by lines 21-27 of page 9, lines 1-2, as well as lines 9-12 in page 10 of the instant application. Dependent claims 3, 14, and 25 have been amended to clarify the above amendments. No new matter has been added.

Hence, Applicant respectfully submits that independent claims 1, 12, and 23 as presently amended are in condition for allowance. Applicant also submits that claims 2, 5, 7-11, and 34, which depend upon claim 1, claims 13, 16, 18-22, and 35, which depend upon claim 12, and claims 24, 27, 29-33, and 36, which depend upon claim 23, are for the same reasons in condition for allowance and for reasons of the unique combinations recited in such claims.

CONCLUSION

It is submitted that the present application is presently in form for allowance. Such action is respectfully requested.

Respectfully submitted,

By /Shun Yao/
Shun Yao
Registration No. 59,242

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Shun Yao
PARK, VAUGHAN & FLEMING LLP
2820 Fifth Street
Davis, CA 95618-7759
Tel: (530) 759-1667
FAX: (530) 759-1665
Email: shun@parklegal.com